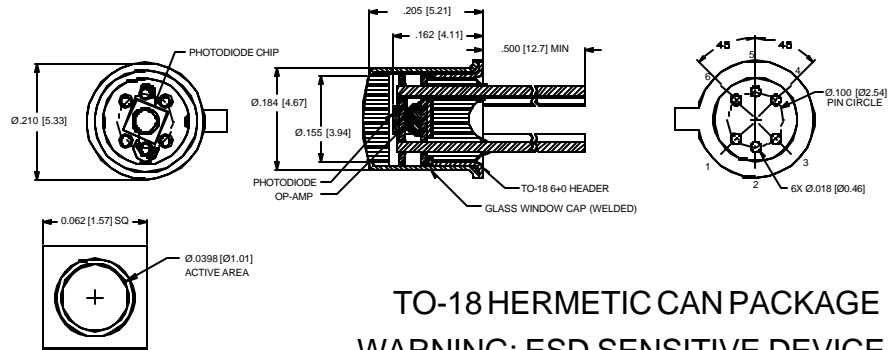




### PACKAGE DIMENSIONS INCH [mm]



TO-18 HERMETIC CAN PACKAGE  
WARNING: ESD SENSITIVE DEVICE

ACTIVE AREA = 0.80 mm<sup>2</sup>

### FEATURES

- 24 MHz bandwidth
- single supply operation
- Wide dynamic range
- Low power: 5 V @ 25 mA

### DESCRIPTION

The **PDB-708** is a high speed PIN photo-diode integrated with a wide band differential output transimpedance amplifier. It is packaged in a TO-18, 6 leaded hermetic package. Options include, SMA, ST & FC type fiber optic ADMs.

### APPLICATIONS

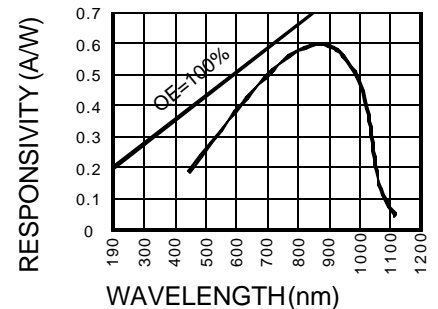
- Fiber optic receivers
- Industrial controls
- High speed optical coupling
- Local area network

### PHOTODIODE ABSOLUTE MAXIMUM RATING (TA=25°C unless otherwise noted)

SYMBOL	PARAMETER	MIN	MAX	UNITS
V <sub>BR</sub>	Reverse Voltage		300	V
T <sub>STG</sub>	Storage Temperature	-55	+125	°C
T <sub>O</sub>	Operating Temperature Range	-40	+80	°C
T <sub>S</sub>	Soldering Temperature*		+260	°C
I <sub>L</sub>	Light Current		500	mA

\*1/16 inch from case for 3 secs max

### SPECTRAL RESPONSE



### PHOTODIODE ELECTRO-OPTICAL CHARACTERISTICS (TA=25°C unless otherwise noted)

SYMBOL	CHARACTERISTIC	TEST CONDITIONS	MIN	TYP	MAX	UNITS
I <sub>SC</sub>	Short Circuit Current	H = 100 fc, 2850 K	7	8.5		μA
I <sub>D</sub>	Dark Current	H = 0, V <sub>R</sub> = 10 V		2	10	nA
R <sub>SH</sub>	Shunt Resistance	H = 0, V <sub>R</sub> = 10 mV		500		MΩ
TC R <sub>SH</sub>	RSH Temp. Coefficient	H = 0, V <sub>R</sub> = 10 mV		-8		% / °C
C <sub>J</sub>	Junction Capacitance	H = 0, V <sub>R</sub> = 45 V**		2.2	2.4	pF
λ <sub>range</sub>	Spectral Application Range	Spot Scan	400		1100	nm
λ <sub>p</sub>	Spectral Response - Peak	Spot Scan		900		nm
V <sub>BR</sub>	Breakdown Voltage	I = 1 μA	100	300		V
NEP	Noise Equivalent Power	V <sub>R</sub> = 45 V @ Peak		1x10 <sup>-14</sup>		W/√Hz
tr	Response Time	R <sub>L</sub> = 50Ω V <sub>R</sub> = 45 V λ = 900nm		3		nS

Information in this technical data sheet is believed to be correct and reliable. However, no responsibility is assumed for possible inaccuracies or omission. Specifications are subject to change without notice. \*\* f = 1 MHz

AMPLIFIER SPECIFICATION (SO PACKAGE @T<sub>A</sub> = 25° C and V<sub>S</sub> = +5vdc UNLESS OTHERWISE NOTED)

CHARACTERISTIC	TEST CONDITIONS	MIN	TYP	MAX	UNITS
<b>DYNAMIC PERFORMANCE</b>					
BANDWIDTH	3 dB	180			MHz
PULSE WIDTH MODULATION	10 μA TO 200 μA PEAK		500		ps
RISE AND FALL TIME	10% TO 90% TO 3%,		1.5		ns
SETTLING TIME	0.5 V DIFF OUTPUT STEP		3		ns
<b>INPUT</b>					
LINEAR INPUT CURRENT RANGE			±30		μA
MAX INPUT CURRENT RANGE		±200	±350		μA
OPTICAL SENSITIVITY			-36		dBm
INPUT STRAY CAPACITANCE	DIE, BY DESIGN SOIC, BY DESIGN		0.2 0.4		pF pF
INPUT BIAS VOLTAGE	+V <sub>S</sub> TO I <sub>IN</sub> AND V <sub>BYP</sub>	1.6		2.0	V
<b>NOISE</b>					
INPUT CURRENT NOISE	DIE, SINGLE ENDED AT P <sub>OUT</sub> , OR DIFFERENTIAL (P <sub>OUT</sub> - N <sub>OUT</sub> ), C <sub>STRAY</sub> = 0.3 pF		3.0		pA/√Hz
TOTAL INPUT RMS NOISE	f = 100 MHz DC TO 100 MHz		26.5		nA
<b>TRANSFER CHARACTERISTICS</b>					
TRANSRESISTANCE	SINGLE ENDED DIFFERENTIAL	8 16	10 20	12 24	KΩ KΩ
POWER SUPPLY REJECTION RATIO	SINGLE ENDED DIFFERENTIAL		37.0 40		dB dB
<b>OUTPUT</b>					
DIFFERENTIAL OFFSET			6	20	mV
OUTPUT COMMON-MODE VOLTAGE	FROM POSITIVE SUPPLY	-1.5	-1.3	-1.1	V
VOLTAGE SWING (DIFFERENTIAL)	POSITIVE INPUT CURRENT, R <sub>L</sub> = ∞ POSITIVE INPUT CURRENT, R <sub>L</sub> = 50 Ω		1.0 600		V <sub>PP</sub> mV <sub>PP</sub>
OUTPUT IMPEDANCE		40	50	60	Ω
<b>POWER SUPPLY</b>					
OPERATING RANGE	T <sub>MIN</sub> TO T <sub>MAX</sub> SINGLE SUPPLY	+4.5	+5	+11	V
CURRENT	DUAL SUPPLY	±2.25	25	±5.5 26	V mA

AMPLIFIER ABSOLUTE MAXIMUM RATING (TA=25°C UNLESS OTHERWISE NOTED)

PARAMETER	MIN	MAX	UNITS
SUPPLY VOLTAGE	±4.5	±12	V
POWER DISSIPATION		.9	μV
STORAGE TEMPERATURE	-55	+125	° C
OPERATING TEMPERATURE	-40	+85	° C

PIN CONNECTIONS	
1	OUTPUT (+)
2	PHOTODIODE CATHODE
3	OUTPUT (-)
4	GROUND/CASE
5	PHOTODIODE ANODE
6	Vcc (5V)

WARNING:  
ESD SENSITIVE DEVICE

